is again noted with appreciation. No new matter has been introduced into the application.

The Examiner has objected to the Abstract as containing the word "comprising" and required correction. This objection and requirement are respectfully traversed as being moot in view of the amendment made above in which the word "including" has been substituted for "comprising". Accordingly, reconsideration and withdrawal of the objection and requirement are respectfully requested.

Claims 3 and 16 have been rejected under 35 U.S.C. §112, second paragraph as containing recitations which are redundant over recitation of claims from which they respectively depend. This rejection is respectfully traversed as being moot in view of the cancellation of claims 3 and 16, above. Therefore, withdrawal of this rejection is in order and respectfully requested.

Claims 1 - 8, 15, 16 and 18 have been rejected under 35 U.S.C. §103 as being unpatentable over Fork et al. in view of the newly cited reference to Uno et al. This rejection is respectfully traversed, particularly since the deficiencies of Fork et al. to answer the references of record have already been pointed out in a manner which was persuasive in regard to a previous rejection of these claims which included reliance on Fork et al. and the teachings of Fork et al. are not supplemented at these points of deficiency by the reference to Uno et al.

Specifically, it was pointed out in the response filed March 11, 2002, Fork et al. was discussed as follows (emphasis added by italics):

> "...The subject matter of Fork et al. is directed to an arrangement for developing cumulative exposure of a photosensitive surface in a xerographic printer using organic light-emitting diodes which have relatively low luminance unless driven at a high power level which would unacceptably shorten their useful lifetime. The matrix array of light-emitting elements is integrated on a single insulating substrate. However, Fork et al. contains no teaching or suggestion of *integrating horizontal and vertical scanning circuits on the same insulating substrate as the light emitting devices*, as recited in claim 1, the use of organic electroluminescent light-emitting devices, as recited in claim 2, or the features recited in claims 3 - 8 in combination with the integrated scanning circuits and light-emitting devices.
>
> "More specifically, while the Examiner asserts that Fork et al. discloses a xerographic printing system including a picture element array and horizontal and vertical scanning circuits *formed* on the same insulating substrate and cites Figure 8 and column 8, lines 13 - 60 in support thereof, it is respectfully submitted that Fork et al. does not, in fact, contain such teachings. Figure 8 is a preferred schematic layout of a four pixel portion of the light emitter array which implements the circuit diagram of Figure 7. It

is abundantly clear that no vertical or horizontal *scanning* circuits are included therein but only data gate and power connections brought out to the edges thereof. Contrary to the Examiner's assertions, the control electronics 22 including *gate driver* 30 and *line driver* 32, 34, circuits to which these lines are directed to be connected are illustrated in Figures 1 and 2 of Fork et al. as being separately formed from LED array 20. The description thereof at column 5, lines 19 - 50, contains no mention of being "formed on a same insulating substrate" with the light-emitting devices, as recited in claim 1, much less the poly-crystal thin-film transistors, now recited in claim 1, which supports such formation/integration of the horizontal and vertical scanning circuits as peripheral circuits with the light-emitting element array.

"The claimed feature of integration of the scanning circuits with the light-emitting devices provides the unexpected effects of reducing the number of required connections to the print head, supporting increased miniaturization and high density and print image resolution while maintaining the functions of gray scale printing and allowing use of relatively low luminance light-emitting devices and extending their useful lifetime as well as the functions of facilitating corrections for variations in photosensitivity of the xerographic surface and luminance of the light-emitting devices, and correction for location of the print head so that the print head can be replaced by a user without a need for making fine adjustments. *These functions are not addressed by Fork et al.*

"Accordingly, it is respectfully submitted that the rejection of claims 1 - 8 for anticipation by Fork et al. is clearly in error since Fork et al., while teaching integration of the light-emitting elements in an array, does not teach inclusion of *horizontal and vertical scanning circuits on the same insulating substrate*, as recited in claim 1, or the particular organic light-emitting devices recited in claim 2.

"Therefore, no demonstration of anticipation has been made or can be made based on Fork et al. By the same token, *since Fork et al. does not address the problems for which the claimed subject matter provides a solution or lead to an expectation of success in solving these problems by the expedient of the claimed subject matter, Fork et al. cannot provide evidence of a level of ordinary skill in the art that would negate patentability* and therefore, the above-discussed distinction from Fork et al. must be given patentable weight to patentably distinguish thereover."

While the Examiner now *admits* that Fork et al. does not explicitly describe the picture element array and the horizontal and vertical scanning circuits being formed on the same insulating substrate, the Examiner suggests that this feature is shown in Figure 1 and suggests that even if this feature is not so suggested, it is obvious over the teachings of Uno et al. The Examiner's errors in this regard are abundantly evident from the fact that, in the absence of a description of such a feature of the illustration of Figure 1, the illustration of Figure 1 does not necessarily teach or suggest anything beyond the *mounting* of

various chips on a circuit board as is indicated to be the conventional construction prior to the present invention. See pages 3 - 4 of the present specification. Such a teaching certainly falls far short of answering the recitations of the *scanning* circuits and the light-emitting array being "*formed*" on the same substrate. Figure 3 of Fork et al. and the description thereof at column 5, line 52, through column 6, line 19, certainly appears to indicate that separate chips mounted on a circuit board is more likely to have been depicted than the Examiner's interpretation which, it is respectfully submitted cannot be reached except through impermissible hindsight in view of the present disclosure.

Moreover, column 5, lines 19 - 50, of Fork et al. clearly indicate that "control electronics 22" depicted in Figure 1 is limited to "drivers" (e.g. gate drivers 30 and data line drivers 32 and 34) which clearly does not answer the recitations of "a horizontal *scanning* circuit" and a "vertical *scanning* circuit" which are "*formed*" on the same substrate with the light-emitting array, as previously pointed out as noted above. Further, in the context of this deficiency of Fork et al., it is particularly clear that Uno et al. does not supplement Fork et al. in regard to these claim recitations since the transistor of Uno et al. is a multi-gate transistor evidently (from the circuit of Figure 3 of Uno et al.) having the function of an inverter circuit in order to increase speed of switching of the light-emitting element state. Therefore, Uno et al. teaches nothing in regard to "*scanning* circuits formed on the same substrate with the light-emitters and provides no evidence of the level of ordinary skill in the art in regard thereto which would support a conclusion of obviousness of such a feature, much less enabling its realization or the realization of the numerous meritorious effects thereof, as discussed in previous responses.

Therefore, it is clearly seen that the combination of Fork et al. and Uno et al. does not teach, suggest or provide any evidence of the level of ordinary skill in the art in regard to *scanning circuits and a light-emitting array formed on the same insulating substrate* and the Examiner has *again* failed to make a *prima facie* demonstration of obviousness of any claim in the application. Accordingly, it is respectfully submitted that the sole ground of rejection based on prior art is clearly in error and reconsideration and withdrawal of the same in respectfully requested.

Since all rejections, objections and requirements contained in the outstanding official action have been fully answered and shown to be in error and/or inapplicable to the present claims, it is respectfully submitted that reconsideration is now in order under the provisions of 37 C.F.R. §1.111(b) and

such reconsideration is respectfully requested. Upon reconsideration, it is also respectfully submitted that this application is in condition for allowance and such action is therefore respectfully requested.

If an extension of time is required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

APPENDIX

Abstract:

An optical printer head with a plurality of light-emitting devices arranged in two dimensions is capable of providing a desired amount of exposure using light-emitting devices having even small luminance, ease of corrections to a sensitivity of a photosensitive body and to a positional displacement of an object to be printed, performing printing on multiple gray scales and implementing high density and miniaturization. The optical printer head is so configured that a picture element array [comprising] <u>including</u> picture elements containing light-emitting devices arranged in line and string directions in two dimensions, a horizontal scanning circuit to feed data signals to each picture element string in the picture element array and a vertical scanning circuit to sequentially select and activate each picture element in the picture element array are formed on a same insulating substrate to support production of the above effects. The luminance of the picture elements is also made variable by use of a plurality of light-emitting devices and/or variable drive for each picture element to enhance the continuity of gray scale achieved.